REMARKS

This is in response to the Office Action dated June 4, 2003. New dependent claims 25-28 have been added. Example support for new claims 25-26 may be found at page 26, line 14 to page 27, line 23. Example support for new claim 27 may be found at page 28, line 3 to page 30, line 4. Example support for new claim 28 may be found at page 31, line 23 to page 32, line 9. Claims 1-28 are pending.

General

For purposes of example, and without limitation, certain example embodiments of this invention relate to a liquid crystal display (LCD) device wherein wiring(s) from one substrates are electrically connected to wiring(s) of the opposite substrate. For example, Fig. 1 of the instant application illustrates that deformable conductive particles 20 in a transfer section 24 are used to electrically connect input terminals 15a of the active substrate to data lines 15 of the opposite or counter substrate. Thus, it can be seen that the inputs for data lines 15 are on the substrate opposite to the data lines themselves. The transfer section 24, in addition to the deformable conductive particles 20, further includes a different type of spacer particle(s) 21 for spacing the substrates from one another.

In certain embodiments of this invention, the conductive particles 20 are both larger in size and more deformable (i.e., have greater flexibility) than are spacer particles 21. In other words, two different types of particles 20 and 21 are used so that, while one type of particles (spacers 21) keeps a space between the substrates, another type of particles (conductive particles 20) is deformed in order to provide a sufficient electrical

contact area thereby allowing desirable electrical conduction (e.g., pg. 30, lines 10-21). Example advantages associated with the use of these different particle types 20 and 21 are discussed on pages 27-30 of the instant application. Furthermore, in certain embodiments of this invention, a mean distribution volume D of the conductive particles 20 {i.e., (piece)/mm^2} is within a range of $1000 \geq D \geq 5/S$, where an area of the transfer section in a direction parallel to the substrates is S mm^2. Example advantages associated with this mean distribution range D are discussed on pages 46-52 of the instant specification.

<u>Claim 1</u>

Claim 1 stands rejected under 35 U.S.C. Section 102(b) as being allegedly anticipated by Takafumi (JP 5-165060). This Section 102(b) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires "at least one transfer section for electrically connecting the first signal wiring or the second signal wiring and the substrate opposite to the first signal wiring or the second signal wiring, <u>wherein said transfer section comprises both first and second types of particles, said first type of particles in said transfer section being conductive and having greater flexibility and greater size than said second type of particles in said transfer section, so that said first type of particles in said transfer section is for electrically connecting the first signal wiring or the second signal wiring and the substrate opposite to the first signal wiring or the second signal wiring, and said second type of particles is for spacing the substrates from one another</u>." For example, and without limitation, see Fig. 1 of the instant application which illustrates a first type of

particles 20 being conductive and having greater flexibility and greater size than a second type of particles 21 in the transfer section. In Fig. 1, the first type of particles 20 is for electrically connecting the first signal wiring or the second signal wiring and the substrate opposite to the first signal wiring or the second signal wiring; and the second type of particles 21 is for spacing the substrates from one another. The cited art fails to disclose or suggest the aforesaid quoted and underlined aspect of claim 1.

Takafumi discloses conductive particles 12 in a sealing section for electrically connecting input terminals on a first LCD substrate to wirings on the opposite or second LCD substrate. However, Takafumi fails to disclose or suggest the first and second *different types of particles* in a transfer section as required by the portion of claim 1 quoted and underlined above. Moreover, Takafumi clearly fails to disclose or suggest that while a space between substrates is kept by one type of particle(s), sufficient electrical communication is provided by deformation of another type of particle(s) as required by claim 1. Takafumi is entirely unrelated to the invention of claim 1 in each of these respects.

Pitt and Burrell also fail to disclose or suggest the first and second *different types of particles* in a transfer section as required by the portion of claim 1 quoted and underlined above. Moreover, Pitt and Burrell also fail to disclose or suggest that while a space between substrates is kept by one type of particle(s), sufficient electrical communication is provided by deformation of another type of particle(s) as required by claim 1. Pitt and Burrell are both entirely unrelated to the invention of claim 1 in each of these respects.

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A liquid crystal display device, comprising:

a switching element substrate ~~having~~ comprising a plurality of switching elements;

a counter substrate opposite to the switching element substrate;

a liquid crystal layer formed between the substrates;

a sealing section provided so as to enclose a display area between the substrates for sealing liquid crystal of ~~constituting~~ the liquid crystal layer~~, the sealing section having conductive particles~~;

a first signal wiring, provided on one of the substrates for controlling the switching elements;

a second signal wiring, provided on the other substrate so as to be opposite to the first signal wiring for applying a voltage to the liquid crystal layer; and

at least one transfer section for electrically connecting the first signal wiring or the second signal wiring and the substrate opposite to the first signal wiring or the second signal wiring, ~~via the conductive particles~~ wherein said transfer section comprises both first and second types of particles, said first type of particles in said transfer section being conductive and having greater flexibility and greater size than said second type of particles in said transfer section, so that said first type of particles in said transfer section

is for electrically connecting the first signal wiring or the second signal wiring and the substrate opposite to the first signal wiring or the second signal wiring, and said second type of particles is for spacing the substrates from one another.

2. (Original) The liquid crystal display device set forth in Claim 1, wherein: an input terminal of the first signal wiring and an input terminal of the second signal wiring are provided on one of the substrates.

3. (Original) The liquid crystal display device set forth in Claim 1, wherein: the transfer section includes (a) a first contact pad, provided on a first substrate which is one of the substrates and has an input terminal of the first signal wiring and an input terminal of the second signal wiring, which is connected to one of the first signal wiring and the second signal wiring provided on the first substrate, (b) a second contact pad, provided on a second substrate which is the other substrate, which is connected to the other one of the first signal wiring and the second signal wiring on the second substrate (the other substrate), and (c) the conductive particles connected to the first contact pad and the second contact pad.

4. (Original) The liquid crystal display device set forth in Claim 2, wherein: the transfer section includes (a) a first contact pad, provided on a first substrate which is one of the substrates and has the input terminal of the first signal wiring and the input

terminal of the second signal wiring, which is connected to one of the first signal wiring and the second signal wiring provided on the first substrate, (b) a second contact pad, provided on a second substrate which is the other substrate, which is connected to the other one of the first signal wiring and the second signal wiring on the second substrate (the other substrate), and (c) the conductive particles connected to the first contact pad and the second contact pad.

5. (Original) The liquid crystal display device set forth in Claim 3, wherein: the first and second contact pads have substantially a same resistance.

6. (Original) The liquid crystal display device set forth in Claim 4, wherein: the first and second contact pads have substantially a same resistance.

7. (Original) The liquid crystal display device set forth in Claim 3, wherein: the transfer section is provided (a) between the first signal wiring and a first signal generation circuit which provides a signal to the first signal wiring, or (b) between the second signal wiring and a second signal generation circuit which provides a signal to the second signal wiring.

8. (Original) The liquid crystal display device set forth in Claim 4, wherein: the transfer section is provided (a) between the first signal wiring and a first signal generation

circuit which provides a signal to the first signal wiring, or (b) between the second signal wiring and a second signal generation circuit which provides a signal to the second signal wiring.

9. (Original) The liquid crystal display device set forth in Claim 5, wherein: the transfer section is provided (a) between the first signal wiring and a first signal generation circuit which provides a signal to the first signal wiring, or (b) between the second signal wiring and a second signal generation circuit which provides a signal to the second signal wiring.

10. (Original) The liquid crystal display device set forth in Claim 6, wherein: the transfer section is provided (a) between the first signal wiring and a first signal generation circuit which provides a signal to the first signal wiring, or (b) between the second signal wiring and a second signal generation circuit which provides a signal to the second signal wiring.

11. (Original) The liquid crystal display device set forth in Claim 1, wherein: a mean distribution volume D of the conductive particles (piece)/mm^2 is within a range of $1000 \geq D > 5/S$, where an area of the transfer section in a direction parallel to the substrates is S mm^2.

12. (Original) The liquid crystal display device set forth in Claim 11, wherein: the mean distribution volume D is within a range of $600 \geq D > 5/S$.

13. (Original) The liquid crystal display device set forth in Claim 12, wherein: the mean distribution volume D is within a range of $400 \geq D > 5/S$.

14. (Original) The liquid crystal display device set forth in Claim 3, wherein: the first substrate is the switching element substrate having the switching elements.

15. (Original) The liquid crystal display device set forth in Claim 4, wherein: the first substrate is the switching element substrate having the switching elements.

16. (Original) The liquid crystal display device set forth in Claim 3, wherein: the input terminal of the first signal wiring and the input terminal of the second signal wiring are made of a conductive material whose resistance is smaller than that of the first signal wiring or the second signal wiring formed on the second substrate.

17. (Original) The liquid crystal display device set forth in Claim 4, wherein: the input terminal of the first signal wiring and the input terminals of the second signal wiring are made of a conductive material whose resistance is smaller than that of the first signal wiring or the second signal wiring formed on the second substrate.

18. (Original) The liquid crystal display device set forth in Claim 3, wherein: an insulation film having an opening is formed on at least one of the substrates, and the first contact pad or the second contact pad is provided in the opening.

19. (Original) The liquid crystal display device set forth in Claim 4, wherein: an insulation film having an opening is formed on at least one of the substrates, and the first contact pad or the second contact pad is provided in the opening.

20. (Original) The liquid crystal display device set forth in Claim 1, wherein: the conductive particles have elasticity.

21. (Original) The liquid crystal display device set forth in Claim 20, wherein: the conductive particles have round shapes and diameters which are greater than a cell thickness of the sealing section.

22. (Original) The liquid crystal display device set forth in Claim 1, wherein: the conductive particles are provided only in an area which is 50 μm or more far from an interface between the liquid crystal layer and the sealing section.

23. (Original) The liquid crystal display device set forth in Claim 1, wherein: the conductive particles are coated with a conductive material.

24. (Original) The liquid crystal display device set forth in Claim 3, wherein: the transfer sections are provided alternately along both edges of a width in the sealing section, and a width of the second signal wiring is narrower than that of the second contact pad.

25. (New) The liquid crystal display device of claim 1, wherein said first type of particles is formed by coating respective surfaces of elastic particles with a conductive material, and said second type of particles comprises glass fiber.

26. (New) The liquid crystal display device of claim 1, wherein said sealing section is formed by mixing said first and second types of particles into a thermosetting material in predetermined proportions.

27. (New) The liquid crystal display device of claim 1, wherein said sealing section is formed by applying a thermosetting material, to which said first and second types of particles are mixed, on one of the substrates, said one of the substrates is mated to the other of the substrates, and these mated substrates are pressurized at a pressure for deforming the first type of particles so that the first type of particles is deformed to a thickness approximately equal to a cell thickness defined by the second type of particles.

28. (New) The liquid crystal display device of claim 1, wherein said at least one transfer section has a staggered structure.